

AMENDMENT

IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application. Where claims have been amended and/or canceled, such amendments and/or cancellations are done without prejudice and/or waiver and/or disclaimer, and Assignee reserves the right to claim this subject matter in a continuing application:

1. (Currently Amended) ~~A method for automatically finding out the position of a document placed on a scanner from a pre-scanned image taken from the scanner window including portions of a background color, an illuminator and the document, comprising steps of:~~

obtaining a pre-scanned image from a scanner, wherein the pre-scanned image includes a document image portion and a background image portion;

~~a) determining a preliminary range having a minimum rectangular area covering said illuminator and said document by searching from the rim toward the center of said pre-scanned image based on distinguishing from said background color~~ range of the pre-scanned image;

~~b) encoding the relationship between said document and said background color into an identification code by registering the colors of four corner points of said preliminary range that indicates whether said corners have the same color with said background color;~~

~~c) finding out the positional relationship between a center point of said illuminator and a center point of said preliminary range;~~

~~d) determining the direction of said document in said preliminary range; and~~

~~e) finding out the detailed position of said document by searching the boundary of said document from the rim of said preliminary range in said direction toward said document.~~

distinguishing at least a portion of said document image portion from said background image portion; and

determining a position of the document image portion within the range of the pre-scanned image.

2. (Currently Amended) ~~The A-method for automatically finding out the position of a document placed on a scanner according to~~ of claim 1 wherein said step of determining a said preliminary range starts from comprises locating one side of said pre-scanned image, searches and searching along one axis of coordinates to verify the change of color of pixels on each line; then the same process on another axis of coordinates so as to get coordinates the one side to identify at least one of four corners P1(X1,Y2), P2(X2,Y2), P3(X2,Y1) and P4(X1,Y1) corner of the pre-scanned image.

3. (Currently Amended) ~~The A-method for automatically finding out the position of a document placed on a scanner according to~~ of claim 2 1 wherein said process of searching along one axis of coordinates includes verifying along X-axis the change of color of pixels on each column till a column X1 of pixels that includes a different color; further searches till a column Xe of pixels that revert the same color, then the coordinate X2 equals to Xe - 1 distinguishing comprises identifying color differences between said document image portion and said background image portion.

4. (Currently Amended) ~~The A-method for automatically finding out the position of a document placed on a scanner according to~~ of claim 2 1 wherein said process of searching along one axis of coordinates includes verifying along Y-axis the change of color of pixels on each column till a row Y1 of pixels that includes a different color; further searches till a row Ye of pixels that revert the same color, then the coordinate Y2 equals to Ye - 1 distinguishing comprises identifying one or more corners of the document image portion within the pre-scanned image.

5. (Currently Amended) ~~The A-method for automatically finding out the position of a document placed on a scanner according to~~ of claim 4 4 wherein said identification code for corner points of said preliminary range is encoded with "1" for the same color with said background color, and "0" for other colors different from said background color identifying one or more corners comprises identifying color differences between said document image portion and said background image portion at the one or

more corners.

6. (Currently Amended) ~~The A-method for automatically finding out the position of a document placed on a scanner according to~~ of claim 4-5 wherein said positional relationship between a center point of said illuminator and a center point of said preliminary range is based on a same origin point of ~~coordinates~~ identifying four corners further comprises identifying a center point of said document image portion.

7. (New) The method of claim 5, wherein the document image portion and a background image portion comprise different colors.

8. (New) The method of claim 1, and further comprising distinguishing at least a portion of said document image portion and/or said background image portion from an illuminated portion of the pre-scanned image.

9. (New) The method of claim 1, and further comprising determining the positional relationship between said document image portion and said background image portion within the range of the pre-scanned image.

10. (New) An apparatus, comprising:

a scanner comprising:

a scanner window adapted to have a document disposed thereon; and

a scanner cover having a background, wherein said background is adapted to press on a document disposed on the scanner window, wherein said scanner is further adapted to:

obtain a pre-scanned image of at least a portion of the document and at least a portion of the background;

determine a preliminary range of the pre-scanned image;

distinguish at least a portion of the pre-scanned image comprising said portion of the document from at least a portion of the image comprising said portion of the background; and
determine a position of the document portion within the preliminary range of the pre-scanned image.

11. (New) The apparatus of claim 10, and further comprising an illuminator disposed on the scanner cover and adapted to illuminate at least a portion of a document disposed on the scanner window.

12. (New) The apparatus of claim 10, wherein said determining a preliminary range comprises locating one side of said pre-scanned image, and searching along the one side to identify at least one corner of the pre-scanned image.

13. (New) The apparatus of claim 10, wherein said scanner is further adapted to identify color differences between said document portion and said background portion.

14. (New) The apparatus of claim 10, wherein said scanner is further adapted to identify one or more corners of the document image portion within the pre-scanned image.

15. (New) The apparatus of claim 14, wherein said scanner is further adapted to identify color differences between said document portion and said background portion at the one or more corners.

16. (New) The apparatus of claim 10, wherein said scanner is further adapted to identify a center point of said document portion.

17. (New) The apparatus of claim 10, wherein the document portion and a background portion comprise different colors.

18. (New) The apparatus of claim 11, wherein said pre-scanned image further comprises an image of at least a portion of said illuminator.

19. (New) The apparatus of claim 18, and further comprising distinguishing at least a portion of said document portion and/or said background portion from the image of at least a portion of said illuminator.

20. (New) The apparatus of claim 10, and further comprising determining a positional relationship between said document portion and said background portion within the preliminary range of the pre-scanned image.